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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,940	04/24/2006	Manabu Honma	33082M320	9917

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WASHINGTON, DC 20036

EXAMINER
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CHANDRA, SATISH

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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11/19/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,940	<b>Applicant(s)</b> HONMA ET AL.	
	<b>Examiner</b> SATISH CHANDRA	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 4 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 4 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/06, 8/06, 9/06, 10/07, 6/08</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over**

**Okase (US 5,329,095) in view of Shimazu et al (US 6,283,175), Takayashu et al (JP 2003-257958) and Kenichi (JP 07-029841).**

**Okase discloses:**

**Regarding claim 4**, a longitudinal type of thermal processing apparatus (Fig 1) comprising: a processing container 21 (Column 3, lines 57 – 67) made of quartz, having an opening part 23 at a lower end thereof, a lid body 26 (Column 4, lines 7 – 11) provided under the opening part, capable of moving up and down so as to open and close the opening part 23, a holder 24 (quartz boat) provided on the lid (Column 4, lines 11 - 17), capable of hold a plurality of wafers to be processed in a tier-like manner, and a heating unit 22 (coil shaped heater) provided around the processing container, wherein the lid has an inner lid part made of quartz that comes in contact with a lower-end surface of the opening part, and an outer lid part made of a metal, SUS (Column 4, lines 50 – 67) that covers an outside surface of the inner lid part.

**Okase does not disclose:**

**Regarding claim 4**, an outer-periphery upper portion of the inner lid part is located inside an outer- periphery edge of the lower-end surface of the opening part; and the lower-end surface of the opening part and the upper-end surface of the inner lid part, which come in contact with each other, are mirror finished.

**Shimazu discloses:**

**Regarding claim 4**, the flange 12 is provided with first mirror surface 49a having an annular or looped shape arranged on the inner side and the flange 6a is provided with a second mirror surface 49b (Column 7, lines 13 – 31). The lid 6 (inner lid) is located inside the outer periphery edge of the tray 58 (Fig 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lid made of quartz comprising an inner part located inside the outer periphery edge of outer lid made of metal in the apparatus of Okase as taught by Shimazu; provide a flange wherein the lower-end surface of the opening part and the upper-end surface of the inner lid part are mirror finished in the apparatus of Okase as taught by Shimazu.

The motivation for providing a lid made of quartz comprising an inner part located inside the outer periphery edge of outer lid made of metal in the apparatus of Okase is to optimize the lid material in the apparatus of Okase as taught by Shimazu.

The motivation for providing mirror finished surfaces in a flange in the apparatus of Okase is to provide an alternate and equivalent sealing mechanism in the apparatus of Okase as taught by Shimazu.

**Okase and Shimazu do not disclose:** a first flange is provided at an outside periphery of the opening part, the first flange is located higher than the lower-end surface of the opening part, a second flange is provided at an outside periphery of the inner lid part, the second flange is located lower than the upper-end surface of the inner lid part, a flange holder is provided between the first flange and the second flange, and a channel for vacuuming is formed by: an inner surface of the flange holder, a lower surface of the first flange, an upper surface of the second flange, an outer surface of the inner lid part from the second flange to the upper-end surface, and an outer surface of the opening part from the lower-end surface to the first flange.

**Takayashu et al discloses:** a flange 4a (first flange, Fig 1) is provided at an outside periphery of the opening part, the first flange is located slightly higher than the lower end surface of the opening part and a flange attachment component 7 (flange holder) is disposed for holding the flange.

**Kenichi discloses:** a second flange (not labeled, Fig 5) provided at an outside periphery of the inner lid part 26, the second flange is located lower than the upper end surface (not labeled) of the inner lid part 26. A flange attachment 54 (Fig 2) is disposed between the first flange 34A and the second flange (not labeled) of the lid part 26. Kenichi further discloses a channel (annular groove 102, Fig 5) is formed between the first flange 34A and the second flange of the lid 26 connected to a vacuum pump 108.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a flange at an outside periphery of the opening part of the processing chamber, the first flange is located slightly higher than the lower

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end surface of the opening part comprising a flange attachment for holding the flange in the apparatus of Okase and Shimazu as taught by Takayashu et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a second flange provided at an outside periphery of the inner lid part wherein the second flange is located lower than the upper end surface of the inner lid and a flange attachment is disposed between the first flange and the second flange and provide a channel is formed between the first flange and the second flange, connected to a vacuum pump in the apparatus of Okase and Shimazu as taught by Kenichi.

The motivation for providing a flange at an outside periphery of the opening part of the processing chamber, the first flange is located slightly higher than the lower end surface of the opening part comprising a flange attachment for holding the flange in the apparatus of Okase and Shimazu is to provide different flange arrangement as taught by Takayashu et al.

The motivation for providing a second flange provided at an outside periphery of the inner lid part wherein the second flange is located lower than the upper end surface of the inner lid and a flange attachment is disposed between the first flange and the second flange in the apparatus of Okase and Shimazu is to provide an alternate and equivalent arrangement of flanges as taught by Kenichi.

The motivation for forming a channel between the first flange and the second flange connected to a vacuum pump is to draw any leakage in the apparatus of Okase and Shimazu as taught by Kenichi.

**Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okase (US 5,329,095) in view of Shimazu et al (US 6,283,175) and Shimazu et al (US 6,030,457).**

**Okase discloses:**

**Regarding claim 8**, a longitudinal type of thermal processing apparatus (Fig 1) comprising: a processing container 21 (Column 3, lines 57 – 67) made of quartz, having an opening part 23 at a lower end thereof, a lid body 26 (Column 4, lines 7 – 11) provided under the opening part, capable of moving up and down so as to open and close the opening part 23, a holder 24 (quartz boat) provided on the lid (Column 4, lines 11 - 17), capable of hold a plurality of wafers to be processed in a tier-like manner, and a heating unit 22 (coil shaped heater) provided around the processing container, wherein the lid has an inner lid part made of quartz that comes in contact with a lower-end surface of the opening part, and an outer lid part made of a metal, SUS (Column 4, lines 50 – 67) that covers an outside surface of the inner lid part.

**Okase does not disclose:**

**Regarding claim 8**, an outer-periphery upper portion of the inner lid part is located inside an outer- periphery edge of the lower-end surface of the opening part; and the lower-end surface of the opening part and the upper-end surface of the inner lid part, which come in contact with each other, are mirror finished.

**Shimazu ('175) discloses:**

**Regarding claim 8**, the flange 12 is provided with first mirror surface 49a having an annular or looped shape arranged on the inner side and the flange 6a is provided

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with a second mirror surface 49b (Column 7, lines 13 – 31). The lid 6 (inner lid) is located inside the outer periphery edge of the tray 58 (Fig 1). Shimazu ('175) further discloses: a flange 6 (lid) comprising a boss 68 integrally formed with the flange 6 wherein the boss 68 surrounds the rotational mechanism 59 and boss 68 is supported by the flange 61 of the rotational mechanism 59 (Fig 1). Flange 61 is fixed on the lower surface of the central opening so as to close the central opening part. Providing a plurality of o-rings between flanges is well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lid made of quartz comprising an inner part located inside the outer periphery edge of outer lid made of metal in the apparatus of Okase as taught by Shimazu ('175); provide a flange wherein the lower-end surface of the opening part and the upper-end surface of the inner lid part are mirror finished in the apparatus of Okase as taught by Shimazu ('175).

it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a flange fixed on the lower surface of the central opening so as to close the central opening part in the apparatus of Okase as taught by Shimazu ('175).

The motivation for providing a lid made of quartz comprising an inner part located inside the outer periphery edge of outer lid made of metal in the apparatus of Okase is to optimize the lid material in the apparatus of Okase as taught by Shimazu ('175).



The motivation for providing mirror finished surfaces in a flange in the apparatus of Okase is to provide an alternate and equivalent sealing mechanism in the apparatus of Okase as taught by Shimazu ('175).

The motivation for provide a flange fixed on the lower surface of the central opening so as to close the central opening part in the apparatus of Okase is to provide a flange for closing the opening in the apparatus of Okase as taught by Shimazu ('175).

**Okase et al and Shimazu et al ('175) do not disclose:**

**Regarding claim 8**, a gas-discharging hole for vacuuming a space defined by the lower-end surface of the boss part.

**Shimazu et al ('457) discloses:** in Fig 2, a lid 3 provided with a central hole 32 and an annular boss (not labeled) formed integrally on the lower surface of the flange surrounding the hole 32. A tubular casing 5 of stainless steel is joined to the lower surface of the flange 33 with an o-ring 5a compressed there between. A tubular member 30 of a stainless steel fitting is fitted in a bore defined by the annular boss and the flange 33. A circular evacuating groove 51 is formed in the surface of the casing 5 contiguous with the lower surface of the flange 33.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a gas discharging hole for vacuuming a space defined by the lower end surface of the boss of the flange in the apparatus of Okase et al and Shimazu et al ('175) as taught by Shimazu et al ('457). It would have been obvious to a skilled artisan to combine prior art elements to yield predictable results such as providing a gas discharging hole for vacuuming a space defined by the lower

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end surface of the boss of the flange in the apparatus of Okase et al and Shimazu et al ('175) as taught by Shimazu et al ('457).

The motivation for providing a gas discharging hole for vacuuming a space defined by the lower end surface of the boss of the flange in the apparatus of Okase et al and Shimazu et al ('175) is to prevent gases emanating from the o-ring 5a from leaking into a processing chamber by evacuating through the evacuating passage in the apparatus of Okase et al and Shimazu et al ('175) as taught by Shimazu et al ('457).

### ***Response to Arguments***

Applicant's arguments, filed 10/21/2008 with respect to claims 1 – 4 and 8 have been fully considered and are persuasive. The non-final rejection of 7/22/2008 has been withdrawn.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SATISH CHANDRA whose telephone number is (571)272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Jeffrie R. Lund can be reached on 571-272-1437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrie R. Lund/  
Primary Examiner, Art Unit 1792

Satish Chandra

Jeffrie R. Lund  
Primary Examiner

SC  
11/14/2008